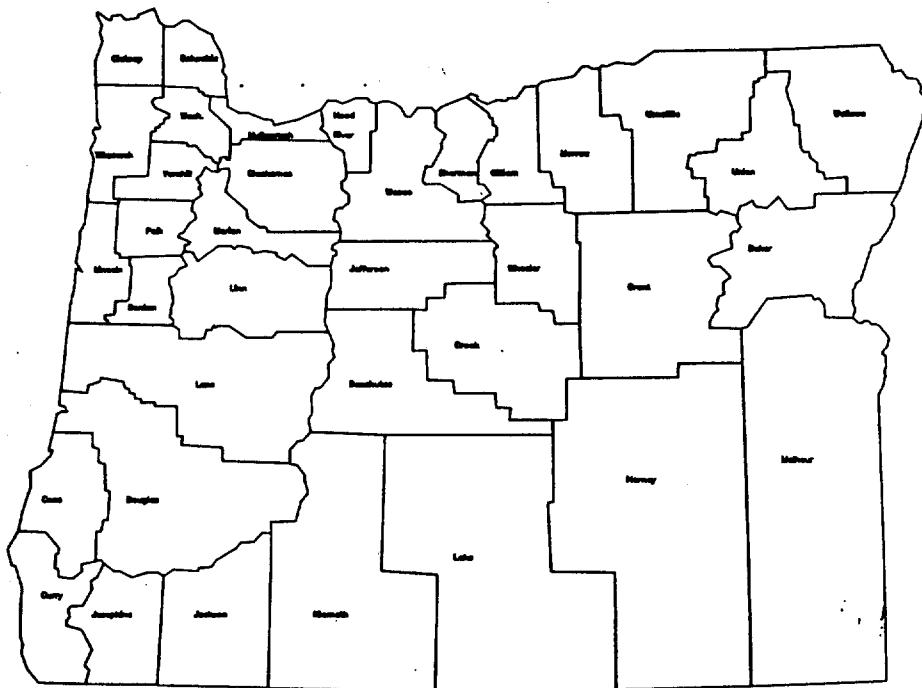


PR 92-269

800 MHZ
PUBLIC SAFETY PLAN
FOR REGION 35



STATE OF OREGON

RECEIVED
JUN 15 1992
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REGION 35
800MHZ PUBLIC SAFETY PLAN

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1.0 SCOPE OF PLAN

1.1 INTRODUCTION

This plan has been developed by a representative group of the Public Safety Radio Service and Special Emergency Radio Services that are eligible for licensing in the 6 MHz (megahertz) of spectrum at 821-824/866-869 MHz allocated for such use by the Federal Communications Commission (FCC). Eligible members of these two radio services are described in the FCC Rule and Regulations Part 90, Subparts B and C.

The plan's intent is to define current and projected needs of this spectrum to and beyond the year 2000. It focuses primarily on the assignment and use of the 800 MHz spectrum within the boundaries of Region 35, which is the state of Oregon.

1.2 BACKGROUND

In December 1983, the United States Congress directed the FCC to establish a plan to ensure that the communications needs of state and local public safety authorities would be met. The Commission set into motion a process which ultimately resulted in their Report and Order, Docket 87-112, which directed the conditional release of 6 MHz of additional 800 MHz spectrum for Region 35 (Oregon), that condition being the acceptance by the FCC of a Regional Communications Plan.

Lieutenant James DeRosier of the Oregon State Police was appointed Convener by the FCC with the responsibility to form a committee for the purpose of developing this regional plan. To this end, a meeting was held on October 11, 1988 at which representatives of Public Safety Radio Services and Special Emergency Radio Service users formed the Oregon Regional Planning Committee (RPC). (See Appendix 6 through Appendix 8)

At a subsequent meeting a new chairman was elected:

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1.3 PURPOSE OF REGION 35 PLAN

Public Safety Radio Service spectrum users within Region 35 realize that radio spectrum is a highly valued and limited resource which requires an orderly and efficient development of its use. Within Region 35 there are numerous entities, especially in urban areas, which need new and/or added communications capabilities in order to maintain satisfactory public services for their citizens.

The purpose of this regional plan is to define, under the auspices of the National Plan, specific users and their spectrum requirements, technical and frequency reuse requirements, and other requirements applicable to Region 35.

The plan has been designed to meet the following requirements:

- 1. Meet the National Public Safety Planning Advisory Committee (NPSPAC) guidelines.**
- 2. Obtain plan approval by the Federal Communications Commission.**
- 3. Provide guidance to the Regional Review Committee/Frequency Advisory Committee in future dealing with the 6MHz of spectrum provided in Docket 8712.**
- 4. Provide direction to future applicants when applying for this spectrum.**
- 5. Provide for inter-regional coordination for spectrum assignment.**

This Regional Plan is in conformity with the National Plan. If there is a conflict between the two plans, the National Plan will govern. By officially sanctioning the Plan, the FCC agrees to its conformity to the National Plan. Nothing in the Plan is to interfere with the proper function and duties of the organizations appointed by the FCC for frequency coordination in the Private Land Mobile Service, but rather it provides procedures that are the consensus of the Public Safety Radio Service and Special Emergency Radio Service user agencies in the Region. If there is a perceived conflict, the judgement of the FCC will prevail.

1.4 REGIONAL PROFILE

1.4.1 Topography

Region 35 is the State of Oregon. The total area is 97,073 square miles. The state is divided into three major areas: the sparsely populated and narrow coastal area between the Pacific Ocean and the Coast Range; the heavily populated Willamette Valley between the Coast Range and the Cascades; and the sparsely populated, relatively flat eastern two-thirds of the state which ranges from large desert areas to the peaks of the Wallowa Range in the northeast. Elevations in the region vary from sea level along the Pacific Ocean to the peaks of the various mountain ranges, with Mount Hood reaching over 10,000 feet.

1.4.2. Demography

Oregon's population in 1990 is 2,884,000, projected to grow to 3,304,300 by the year 2000. Over one-half of the population is concentrated in the northern half of the Willamette Valley, with the greater portion in the Portland Metropolitan Area. In the context of this plan, it is clear that almost all activity regarding 800 MHz Public Safety systems within the foreseeable future will occur within this area.

2.0 REGIONAL PLANNING METHODOLOGY

2.1 REGIONAL PLANNING COMMITTEE (RPC)

Authority for the Regional Planning Committee (RPC) to carry out its assigned tasks was derived from the FCC Report and Order, Docket 87-112. Participants in the formation of the RPC represent interested personnel from public safety and special emergency radio services. This section will cover the method used to create the Plan, the composition of committees, and the intended method of administering the Plan.

2.2 THE PLANNING PROCESS

At the Regional Planning Committee's first meeting on October 11, 1988, Lt. James DeRosier was elected Chairman of the Regional Planning Committee (RPC). To facilitate development of the plan, a working group was appointed under the auspices of the Oregon APCO Engineering and Research Committee, which was expanded to include eligible non-APCO participants. This ad hoc Committee was assigned the task of generating a draft plan.

Considerable effort was made over the next several months to give adequate notification to all interested parties in the State of Oregon and to obtain their participation in the planning process. Committee meetings were held bimonthly at the call of the Chairman at which the various portions of the planning process, participation and plan requirements were discussed and determined.

From the beginning, it was the intention of the Committee to develop a plan which would be ideally suited for the geographic and demographic characteristics which make Oregon unique, while staying within the general guidelines set forth in Docket #87-112 and the National Plan. The Committee attempted at all times to build an element of flexibility into the Regional Plan to allow for future adjustments.

As an initial step in the planning process, the Committee performed a survey of all currently licensed users of Public Safety and Special Emergency radio spectrum. The information requested included: current use, expectations of present or future needs for the new 800 MHz spectrum, and return of frequencies for reuse. From

this survey it became clear that, with the exception of the densely populated Portland area, there was minimal interest in this spectrum. There were many questions about the availability of additional frequencies in the lower frequency spectrum which tended to emphasize the need for the return of these frequencies for reassignment.

2.3 PARTICIPATION

In addition to eligible spectrum users, participation and input has been sought from vendors, SMR providers, and Amateur Disaster Radio groups, and included in the final draft. In all, in addition to public safety agencies, a total of 17 other agencies have been invited to participate or otherwise make their views known to the Committee. (See Appendix 6 and 8)

2.4 APPROVAL

2.4.1 Region 35 Review and Approval

The Committee gave every agency affected by this Plan, whether eligible for the specific frequencies or not, an opportunity for input to and approval of the final draft.

All eligible agencies, and all parties who had previously participated or otherwise expressed interest in the Plan were notified. The notification was published in two newspapers that have statewide circulations. Also letters were sent to nearly all Part 90 users in the State of Oregon. The notification advised interested parties how to obtain a copy for review and comment. The list is in Appendix 9.

A thirty day period was provided for responses with the provision that failure to respond indicated approval. The responses received were considered by the Committee and, where appropriate, incorporated into the final Plan.

2.4.2 Adjacent Regions Review and Approval

In conjunction with the Region 35 review and approval process, the plan was distributed to adjacent regions:

Region 6 - Northern California
Region 12 - Idaho
Region 27 - Nevada
Region 43 - Washington

The letters and the responses are in Appendix 9.

It will be necessary to coordinate inter-regionally due to potential impact of systems that will be implemented at or near region borders. This will be particularly true in the relationship between Region 35 and Region 43 because of Region 43's Canadian coordination requirements.

2.4.3 FCC Approval

Upon acceptance of this plan by the FCC frequencies in the ranges of 821-824 MHz and 866-869 MHz will be available for licensing to Region 35 users.

3.0 REGIONAL REVIEW COMMITTEE

3.1 RESPONSIBILITY AND STRUCTURE

Upon approval of the Region 35 plan by the FCC the Regional Planning Committee will become the Regional Review Committee (RRC). This committee will be established for the purpose of reviewing new applications, conducting an annual system implementation review, making action recommendations to the FCC, resolving inter-regional problems, reviewing and recommending modifications and amendments to the plan, and to exercise general oversight of the plan. The RRC will establish, at its first meeting, its own operating procedures and by-laws.

For the purpose of establishing a basis for membership in the Region 35 RRC, the State of Oregon has been divided into 5 zones.

These zones consist of the following counties:

- | | |
|----------|--|
| Zone I | Multnomah, Washington, Clackamas, Columbia, Clatsop, Tillamook and Hood River. |
| Zone II | Yamhill, Polk, Marion, Lincoln, Benton, Linn, Lane, Douglas and Coos. |
| Zone III | Curry, Josephine, Jackson, Klamath, Lake, Harney and Malheur. |
| Zone IV | Wasco, Sherman, Gilliam, Jefferson, Wheeler, Deschutes and Crook. |
| Zone V | Morrow, Umatilla, Wallowa, Union, Grant and Baker. |

At a minimum, the voting membership of the RRC shall include the designated Public Safety Frequency Advisor(s), 3 members from Zone I, which encompasses the largest population in the region, and one member from each of the other 4 zones in Region 35. Any public safety or public service user may become a

member of the RRC. Agencies will be limited to one voting member of the RRC at any given time. A simple majority of the RRC will constitute a quorum. To make changes in the Region 35 plan will require a two thirds vote of the quorum.

Membership in the committee must be renewed at the beginning of each calendar year. Committee membership is open to any representative from an eligible Public Safety Radio Service or Special Emergency Radio Service agency; no distinction is made regarding federal, state, county or municipal levels of government. However, membership must have been in force 30 days prior to that member exercising his/her voting privileges. Attendance and participation in discussion of issues is necessary to establish an informed consensus, proxy voting will not be permitted.

The RRC will annually elect a chairperson from its membership. It will meet as often as is deemed necessary to conduct its business. Members will be notified by the chairperson or his/her designee via U. S. Mail, 10 days in advance of a meeting. 30 day notice will be required in cases where changes in the Region 35 Plan are to be discussed.

The agenda will be set by the chairperson. Issues of importance may be added to the agenda by a majority vote of the attending members.

All interested parties will be encouraged to attend meetings held by the RRC.

The meeting will be conducted in accordance with Roberts Rules of Order.

It is vital to the interest of the Region 35 public safety agencies that the RRC be maintained as a standing committee for the duration of the Region 35 NPSPAC plan.

3.2 FREQUENCY ADVISORY COMMITTEE

Between meetings of the Regional Review Committee, the Oregon APCO Frequency Advisory Committee shall have authority to act on its behalf in considering routine applications and reviewing implementation progress which are in accord with the Plan. Non-routine or disputed matters shall be referred to the RRC.

4.0 FREQUENCY DISTRIBUTION POLICIES

4.1 GENERAL POLICY

The Regional Planning Committee has established the following frequency distribution policy. This policy will be used as a guide by future applicants and the

Regional Review Committee. Public Safety frequencies involved include 800 MHz frequencies, as well as surrendered 150 MHz and 450 MHz frequencies.

This policy is divided into four sections which are defined below:

- a) Frequency Allocation - the distribution of 800 MHz frequencies.**
- b) Frequency Reuse - the use of the same 800 MHz frequency by two or more agencies which have sufficient geographical separation such that the agencies do not interfere with each other.**
- c) Frequency Give-Back - the return of vacated 150 MHz and 450 MHz frequencies to the FCC for re-licensing after agencies have implemented 800 MHz systems.**
- d) Frequency Recall - a reclamation (initiated by a recommendation of the Regional Review Committee to the FCC) of 800 MHz frequencies from agencies which have failed to make sufficient progress toward the implementation of their proposed 800 MHz system.**

4.2 FREQUENCY ALLOCATION

4.2.1 Allocation Criteria

One criterion used to evaluate a given county's frequency allocation will be that county's population. One channel will be assigned for every 25,000 population or fraction thereof in the county. In sparsely populated areas, agencies may, however, submit justified requests for more frequencies than the number determined by the population-to-channel ratio. Additionally, to ensure accommodation of future needs in these areas, a minimum of four channels shall be set aside for each county, one each for police, fire, medical and Local Government use.

The application should include, in addition to the information specifically requested, any special or unusual circumstances which the applicant wants the Committee to consider.

4.2.2 Allocation Priorities

In the event that prioritization becomes necessary as implementation progresses, the RRC will use the following criteria to establish a system of prioritization. Each item is shown with its maximum allowable point value.

- 6 Immediate need to protect life and property**

- 5 Channel Loading
- 4 Effective system design
- 3 Consolidation or use of a channel(s) by more than one agency
- 2 Implementation Schedule
- 1 Number and usability of vacated channels

The applicant with the highest score will be assigned the highest priority for the available channels. The RRC will be responsible for resolving any conflicts arising from this prioritization.

4.2.3 Channel Assignments

Subject to approval of the Plan by the FCC, the newly allocated 800 MHz channels included in the Plan will be assigned and used in accordance with the agreed upon allocation table, Appendix 5, contained in this document, or as it may be modified in the future.

4.2.4 Frequency Reuse

It is the responsibility of the RRC to maximize the usefulness of the available frequencies. The Committees may therefore require any number of modifications to the applicant's proposed system in order to increase the amount of frequency reuse possible. These modifications include such system design elements as antenna design, transmitted power, transmitter locations, and actual frequencies assigned to the applicant.

4.2.5 Frequency Give-Back

It is anticipated that in all but the most unusual cases, frequencies presently used by a licensee will be turned back for reassignment. This give-back should occur within thirty days following installation, acceptance and full operation of the 800 MHz system.

The RRC will be responsible for recommending reassignment of the channels to other agencies awaiting channels in the lower frequency bands. Normal coordination procedures will be followed with these "give-backs" using the priority criteria in this plan where appropriate.

It is not consistent with the goals and objectives of this Committee to permit the direct reassignment of radio frequencies between agencies. All frequencies are to

be returned to their respective pools to be assigned for the most beneficial public use. Similarly, an agency does not have the option to "farm down" frequencies to other services within their political structure simply to take advantage of surplus equipment.

4.2.6 Frequency Recall

The Committee recognizes that many entities will require a multi-year period in which to accomplish planning, approval, funding, purchase and construction of communication systems. Therefore this Plan is designed to accommodate "slow growth" requirements.

System implementation will be monitored by the RRC to determine if sufficient progress is being made. If no progress is shown in one year after the license is issued, the licensee will be advised of the consequences of their lack of progress. The next milestone will be two years after the license is issued. If at the end of three years the licensee has not shown acceptable progress the RRC may recommend to the FCC revocation of the applicant's license for those unused frequencies.

The notified licensee can appeal this action or can allow the license to be withdrawn. If the assigned frequencies are withdrawn, they will be returned to the appropriate frequency pool and become available for coordination.

4.2.7 Appeal Process

Throughout the frequency coordination process applicants will be given opportunities to appeal decisions, additional requirements and rejection. This appeal will be at two levels. The first level is the RRC and the second is the FCC. An applicant who decides to appeal a rejection should initiate that appeal immediately upon notification from the RRC. In the event that an appeal reaches the second level, the FCC's decision will be final and binding upon all parties.

5.0 APPLICATION PROCEDURES

All requests for frequencies to be used for Public Safety Communications must be submitted to the Frequency Advisor(s) for approval. Eligible applicants include Public Safety agencies and Special Emergency Radio Service agencies. The Frequency Advisor(s) shall review the application to determine its compliance with the Regional Plan as indicated below. Upon application, an objective evaluation procedure shall be instituted. The Evaluation Criteria is discussed in the FREQUENCY DISTRIBUTION POLICIES section of the plan.

If the request for frequencies is not approved by the Frequency Advisor(s), the request will be returned to the applicant for revision and correction.

5.1 CONTENT OF APPLICATIONS

The request shall contain information to justify the frequencies requested and shall demonstrate compliance with the Regional Plan. As a minimum, this request shall consist of the following:

- 5.1.1 Name, address and phone number of the applicant agency(ies) involved, including the name of the person that the Committee may contact regarding technical details of the application.
- 5.1.2 Appropriate FCC and APCO coordination forms.
- 5.1.3 Funding statement or resolution from the appropriate governing Council, Agency or Executive indicating that sufficient funds will be available to meet the Proposed Implementation Schedule (5.1.4 below).
- 5.1.4 Proposed Implementation Schedule; a timetable indicating the anticipated start and completion dates, as well as intermediate dates/milestones.
- 5.1.5 List the frequencies currently assigned to the applicant and those frequencies that will be released for assignment to other users.
- 5.1.6 System design information, listing all relevant technical information. See Section 7.0 TECHNICAL DESIGN REQUIREMENTS.

6.0 MUTUAL AID CHANNELS

NATIONAL COMMON CHANNELS

601 821/866.0125 High Level Calling
639 821/866.5125 Tactical
677 822/867.0125 Tactical
715 822/867.5125 Tactical
753 823/868.0125 Tactical

REGION 35 COMMON CHANNELS

625 821/866.3250 Tactical, Fire/EMS
630 821/866.3875 Tactical, Law Enforcement

657 821/866.7500 Tactical, Local Government
659 821/866.7750 Tactical, Fire/EMS
661 821/866.8000 Tactical, Law Enforcement

The following rules will apply to the Region 35 Common Channels as well as the National Common Channels, except where noted.

6.1 REGIONAL INTEROPERABILITY FOR COMMON CHANNELS

In accordance with the National Plan for 821-824/866-869 MHz, interoperability among federal, state, and local governments during both routine and disaster operations will take place primarily on the five Common Channels as identified in the National Plan. Additionally, through the use of S-160 or equivalent agreements, a licensee may permit federal use of a non-federal communications system. Such use, other than the five Common Channels, is to be in full compliance with the Commission's requirements for government use of non-government frequencies (Title 47 CFR, Sec.2.103). Licensees are allowed to count as additional loading, a factor of two percent for federal interoperability agreements.

6.2 COMMON CHANNEL IMPLEMENTATION

The implementation of the Common Channels designated by the National Plan will be separated into two categories of users: primary and secondary.

6.2.1 Primary User

A Primary User is an agency that operates on five or more channels. The Primary User will be required to have the capability of operating on the National Calling Channel. The Calling Channel will be implemented as a full mobile relay. Primary users will maintain a watch on this channel.

All licensees are encouraged to operate additional stations on any or all of the remaining National Common and Region 35 Common Channels. Agencies within a geographical area are especially encouraged to jointly or individually install and operate a full mobile relay on at least one tactical channel.

6.2.2 Secondary User

A secondary user is an agency that will operate on four channels or fewer. Secondary users are strongly encouraged to operate a base station for continuous monitoring of the National Calling Channel in areas where no primary user is doing so.

6.2.3 Use By Other Entities

Primary and Secondary Users include federal, state and local disaster management agencies, police, fire and medical providers. Other eligibles, such as school buses, volunteer emergency corps, Red Cross, Radio Amateur Civil Emergency Service (RACES), Amateur Radio Emergency Services (ARES), Salvation Army, C.A.P., etc., under the National Plan may also participate on a secondary basis in support of the preservation of life and property during an emergency. These eligibles may use Common Channels when specifically enrolled in a documented emergency plan of a recognized emergency management agency.

6.3 CALLING CHANNEL

The calling channel shall be used to contact other users in the Region for the purpose of requesting incident related information and assistance. This channel shall not be used as an ongoing working channel. Once contact has been established a tactical channel will be selected for use during the incident.

There will be no Calling Channel in the Region 35 Common Channels.

6.4 NATIONAL COMMON TACTICAL CHANNELS AND REGION 35 COMMON CHANNELS

These channels are reserved for use by those agencies in need of conducting inter-agency communications. Incidents requiring multi-agency participation will be coordinated over these channels by the agency controlling the incident. Individual tactical channels may be designated for use by various services on an incident basis by the controlling agency. In the event of multiple incidents requiring the use of these channels, channels shall be designated by mutual agreement between controlling agencies. In no case shall control of these channels remain with any single agency beyond the termination of a declared emergency.

6.5 COMMON CHANNEL USE

Plain language will be used on all Common Channels at all times. The use of unfamiliar terms, phrases or codes will be kept to a minimum unless deemed necessary for security purposes.

The use of these channels for intra-system normal dispatch and routine agency operations is strictly prohibited. Normally, the Common Channels are to be used only for activities requiring communications between agencies not sharing any other compatible communications system. Under emergency situations, one or more tactical channels may be assigned by the controlling agency at the time of the incident.

The use of automatic or operator-assisted connection of these Common Channels to the switched telephone network is prohibited without a specific waiver from the Regional Review Committee.

Voice Privacy, Paging, Alerting, or Signalling on the COMMON CHANNELS is prohibited.

PRIORITY FOR USE

PRIORITY 1 ... Disaster and extreme emergency operations, for mutual aid and interagency communications.

PRIORITY 2 ... Emergency or urgent operations involving imminent danger to the safety of life or property.

PRIORITY 3 ... Special event control activities, generally of a pre-planned nature, and involving joint participation of two or more agencies.

PRIORITY 3A .. Drills, tests and exercises of a civil defense or disaster nature.

PRIORITY 4 ... Single agency secondary communications.

6.6 CTCSS TONE REQUIREMENT

All mobile and portable radios, and mobile relay base stations, operating in the 821-824/866-869 MHz band shall be equipped to operate on the Common Channels using CTCSS tone squelch of 156.7 Hz. All mobile relay base stations shall be equipped to operate as a mobile relay station on demand, but shall normally operate in the repeat disable mode.

7.0 TECHNICAL DESIGN REQUIREMENTS.

7.1 COVERAGE LIMITATIONS

The purpose of this section is to define the technical requirements necessary to assure the maximum utilization of the spectrum addressed in this plan. System coverage or service area will be limited to the smallest geographical area necessary to provide sufficient coverage of the geo-political area of the licensee.

Agencies requesting channels under this plan will have their proposed system design evaluated by the Regional Review Committee.

Agencies with service areas outside their political boundaries may request extended system coverage. Such requests for extended coverage must be accompanied by written justification.

Extended coverage systems will not be authorized unless approved by the Regional Review Committee. Favorable consideration will be given to those extended coverage systems which are shared by more than one licensee.

7.1.1 Definition of Service Area

"System Coverage" or "Service Area" is defined as the boundary where received signal strength falls to 40 dBu (decibels above 1 microvolt per meter - approximately 4.6 microvolts of signal across 50 ohms at 850 MHz).

7.1.2 Calculations of Service Area

Tabulated data from Carey Propagation Curves in Appendix 1 will be used to give the distance to the 40 dBu boundary based on HAAT and ERP. This distance is considered the radius of coverage from the transmitter site. A step-by-step procedure is provided in Appendix 2.

7.1.3 Responsibility For Calculations

It will be the responsibility of the requesting agency to calculate the proposed service area and to validate the accuracy of the calculations. (see Appendix 1 through 4).

7.1.4 Proposed Service Area Exhibit

An agency shall provide, along with its request for frequencies, an exhibit showing the calculated service area and the agency's jurisdictional boundaries. The boundaries must be drawn to scale on a 1:500,000 or larger scale USGS map with a title block including the name of the requesting agency, height above average terrain, effective radiated power, latitude, longitude, ground elevation of the transmitting site, and the distance to the service area boundary in miles, as calculated.

7.2 CONTROL STATION

Control stations will be limited to an effective radiated power of no more than 6 dB above that of a mobile unit associated with the system. A list of control station locations, including latitude, longitude, effective radiated power, and height of antenna above ground level shall be provided with the request for frequencies.

7.3 MAXIMUM EFFECTIVE RADIATED POWER

The maximum effective radiated power (ERP) of all transmitters shall be limited to the minimum amount necessary to provide coverage of the agencies geo-political boundaries. Transmitters installed in aircraft will be limited to a maximum ERP of 1 watt.

7.4 FREQUENCY REUSE

7.4.1 Co-channel Design

Careful adherence to the system technical design requirements of this plan will allow for maximum co-channel usage within the region.

Agencies requesting frequencies that have been previously licensed within this region or an adjacent region must show that their proposed system will operate on an interference-free basis with any existing co-channel system. Requesting agencies must demonstrate that the proposed system signal level will not exceed 5 dBu at any point within the service area of the existing system.

The signal strength of the proposed system is to be calculated by the same method as outlined in "Calculation of Service Area," elsewhere in this plan. After the distance from the proposed transmitter site to the existing service area contour is determined, the received signal strength of the proposed system must be modified to meet the protection criteria. A step-by-step procedure for performing the series of interference calculation is included in Appendix 3.

7.4.2 Adjacent Channel Design

Proposed systems must also be designed for interference-free operations with adjacent channel licensees. The method of determination is identical to that of co-channel design as detailed in "7.4.1 Co-channel Design", with the exception of the existing to proposed signal margin criteria. In the case of adjacent channel systems the signal level will not exceed 25dBu at any point in the existing system. All other calculations will remain the same.

It should be noted that the FCC has adopted technical standards for transmitters which will reduce adjacent channel interference and permit closer geographical channel assignment. However, the Commission has not adopted improved receiver technical standards. It is the position of the Commission that receivers do not cause interference, nor do they threaten effective operation of the public safety network, as would substandard transmitters. Because of the demand for limited spectrum, it is the intent of this plan to provide efficient spectrum utilization within current technological capabilities. Agencies are encouraged to carefully

consider the receiver selectivity specifications of any equipment to be purchased for use in the 821-824/866-869MHz band.

7.4.3 Absolute Mileage Separation

In any case where the service areas of adjacent channel systems are separated by at least 50 miles, the interference studies as set forth in this plan are unnecessary because of free space and terrain losses.

7.5 TRUNKING REQUIREMENTS

As referenced in the national plan, trunking is mandated for any new system with more than four channels in the 800MHz band when located at a single transmitting site. Request for exceptions will be considered by the Regional Review Committee for mobile data use, encryption, and telemetry stations. Other requests for waiver of the trunking requirement will be considered after presentation of evidence by the requesting agency. Approval to waive the trunking requirement will be based on the individual merits of the presentation.

7.6 CODED SQUELCH

The use of CTCSS (Continuous Tone-Coded Squelch Systems) or CDCSS (Continuous Digital-Coded Squelch Systems) is required. Systems not incorporating some form of coded squelch will not be protected from receiving interference.

System designers shall coordinate the coded squelch to enhance system discrimination between desired and undesired signals.

7.7 SYSTEM LOADING AND IMPLEMENTATION REQUIREMENT

Agencies utilizing frequencies in the 821-824/866-869 MHz band shall comply with loading requirements as called for in Part 90.631 of the FCC Rules and Regulations for trunked radio system, and in Part 90.633 for conventional system. As referenced in 90.631 and 90.633, Part 90.629 shall also apply.

7.7.1 Traffic Loading Study

Justification for adding frequencies, or retaining existing frequencies in the 821-824/866-869 MHz band, can be provided by a traffic loading study in lieu of loading by number of transmitters per channel. It will be the responsibility of the requesting agency to provide a verifiable study showing sufficient airtime usage to merit additional frequencies. A showing of airtime usage, excluding telephone interconnect air time, during the peak busy hour greater than 70 percent per channel

on three consecutive days will be required to justify additional or retain existing frequencies.

7.8 SYSTEM ENGINEERING REQUIREMENTS

7.8.1 System Engineering Exhibit

All requests to the Regional Review Committee for additional frequencies must include sufficient data for the Committee to be able to determine proposed system operating parameters.

The system engineering exhibit must show:

1. Transmit output power and frequency.
2. Type of cavities (duplexers and combiners) and associated losses.
3. Type of transmission line and associated loss.
4. Antenna manufacture, model, gain, amount of down-tilt and directivity.
5. Ground elevation above mean sea level.
6. Antenna centerline above ground level.
7. Height above average terrain of antenna centerline.
8. Effective Radiated Power as determined by items 1 through 4.
9. Polar plot of item 8.
10. CTCSS/CDCSS.

A proposed format for this exhibit is Appendix 4.

7.8.2 Average Elevation Exhibit

An additional exhibit showing the average elevation of the terrain of each of the eight main radials will be required. If an outside source is used for the calculations of average terrain, a copy of this report can be substituted for the average elevation exhibit.

7.9 CELLULAR TELEPHONE USE

The use of a car radio telephone via interconnect through an 800 MHz trunked radio system or other two-way radio communications system will normally require a significant amount of air time. Therefore, telephone interconnect is discouraged. The use of a defeatable interconnect for radio telephone use is allowed for system implementation under this Regional Plan. The use of cellular telephone, where available, for automatic interconnect to the Public Switched Telephone Network is expected.

8.0 ADJACENT REGION COORDINATION

Except for the Portland Metropolitan Area and the effect assignment of 800 MHz frequencies has on the adjoining area within Washington State, the areas of Region 35 that adjoin other regions will have very little demand for the frequencies allocated in the plan. This is based on the fact that no existing 800 MHz public safety radio systems are currently operating in these areas and low population levels are unlikely to require the assignment of more than a very few channels within the foreseeable future.

Based on this, it will be very easy to modify and/or adjust the frequency allotments for Region 35 border areas should the need arise due to adjacent region conflicts. However to avoid any conflict along the borders with California and Nevada, which have already had their plans approved, those channels assigned by them to statewide or adjoining county use have been excluded in those Oregon counties abutting them. This will provide an approximate seventy mile buffer.

Close coordination has been maintained with Region 43, the State of Washington, in order to accommodate the future 800 MHz requirements of both Portland (Multnomah County) and adjoining Clark County, Washington. A four-county group including Clark, Multnomah, Washington and Clackamas Counties has been formed to jointly plan for 800 MHz channel use. Designation of frequencies within this plan have been made so as to accomplish this end.

It is recognized that the State of Washington has special restrictions in its Canadian border areas which limit flexibility in channel assignments. This may have an effect on Washington-Oregon border areas both in initial and future channel assignments. Therefore the actual assignment of channels within this Plan may require alterations in the future. This will be accomplished through close cooperation between Region 35 and Region 43.

9.0 CHANNEL ALLOTMENT

Appendix 5 contains the actual channel allotments per county within Region 35 as determined by using the APCO/CET packing program.

APPENDIX 1

TABULATED DATA FROM CAREY PROPOGATION CURVES

	UHF	F(50,50)	dBu/KW	ERP
<u>MILES</u>	<u>100</u>	<u>200</u>	<u>500</u>	<u>1000</u>
5	60.8	66.0	72.9	79.0
6	56.9	61.7	68.7	74.6
7	53.4	58.2	65.1	71.0
8	50.2	55.1	62.0	68.0
9	47.4	52.4	59.4	65.4
10	44.8	49.9	57.0	63.1
11	42.4	47.7	54.9	60.9
12	40.2	45.6	52.9	59.0
13	38.2	43.7	51.1	57.2
14	36.3	41.9	49.5	55.4
15	34.5	40.1	47.9	53.8
16	33.0	38.5	46.3	52.2
17	31.5	37.0	44.9	50.7
18	30.0	35.6	43.5	49.2
19	28.7	34.3	42.1	47.9
20	27.5	33.0	40.8	46.5
21	26.4	31.7	39.5	45.3
22	25.3	30.6	38.3	44.1
23	24.3	29.5	37.1	42.9
24	23.3	28.4	35.9	41.8
25	22.4	27.4	34.8	40.7
26	21.5	26.4	33.8	39.7
27	20.7	25.4	32.7	38.7
28	19.9	24.5	31.7	37.7
29	19.1	23.6	30.7	36.8
30	18.4	22.7	29.8	35.9
31	17.6	21.8	28.9	35.0
32	16.9	21.0	28.0	34.1
33	16.2	20.1	27.1	33.2
34	15.6	19.3	26.3	32.4
35	14.9	18.6	25.5	31.5
36	14.3	17.8	24.6	30.7
37	13.7	17.1	23.8	29.9
38	13.0	16.4	23.0	29.1
39	12.4	15.7	22.3	28.3
40	11.8	15.0	21.5	27.5
41	11.2	14.3	20.7	26.8
42	10.6	13.7	20.0	26.0
43	10.1	13.1	19.2	25.3
44	9.5	12.5	18.5	24.5
45	8.9	11.9	17.8	23.8
46	8.4	11.3	17.0	23.1
47	7.9	10.7	16.3	22.3

Appendix 1 (cont)

	<u>UHF</u>	<u>F(50,50)</u>	<u>dBu/KW</u>	<u>ERP</u>
<u>MILES</u>	<u>100</u>	<u>200</u>	<u>500</u>	<u>1000</u>
48	7.3	10.1	15.6	21.6
49	6.8	9.5	15.0	20.9
50	6.3	8.9	14.3	20.2
51	5.8	8.4	13.6	19.5
52	5.3	7.8	13.0	18.8
53	4.9	7.3	12.4	18.1
54	4.4	6.8	11.8	17.5
55	4.0	6.2	11.2	16.8
56	3.6	5.7	10.6	16.1
57	3.2	5.2	10.0	15.5
58	2.8	4.8	9.5	14.9
59	2.4	4.3	9.0	14.3
60	2.0	3.9	8.4	13.7
61	1.7	3.5	7.9	13.1
62	1.3	3.1	7.4	12.5
63	1.0	2.7	6.9	12.0
64	0.7	2.3	6.4	11.4
65	0.3	1.9	6.0	10.9
66	0.0	1.6	5.5	10.3
67	-0.3	1.2	5.0	9.8
68	-0.7	0.9	4.5	9.3
69	-1.0	0.5	4.1	8.8
70	-1.4	0.2	3.7	8.3
71	-1.7	-0.2	3.2	7.8
72	-2.0	-0.5	2.8	7.3
73	-2.4	-0.9	2.4	6.9
74	-2.7	-1.2	2.0	6.4
75	-3.0	-1.5	1.7	6.0
76	-3.3	-1.9	1.3	5.6
77	-3.5	-2.1	0.9	5.3
78	-3.8	-2.4	0.5	4.8
79	-4.0	-2.7	0.1	4.4
80	-4.3	-3.1	-0.3	3.9

APPENDIX 2

PROCEDURE FOR DETERMINING SERVICE AREA CONTOUR

1. Convert effective radiated power from watts to dBk using the formula:

$$P(\text{dBk}) = (10 \times \log P(\text{watts})) - 30$$

2. Subtract this negative number (in other words, convert it to positive and add) from 40 dBu.
3. In the look-up tables, determine the two height columns that correspond most closely with your H.A.A.T. (For example, if your HAAT is 300 feet, use the 200 and 500 columns.)
4. Interpolate between the listings under the two columns to determine where the calculations of steps 1 and 2 apply.
5. Read the mileage at the extreme left-hand column of the table.

EXAMPLE

To determine the service area of a UHF base station with an ERP of 125 watts and an antenna height above average terrain of 400 feet:

$$P(\text{dBk}) = 10 \times \log (125) - 30$$

$$P(\text{dBk}) = 21 - 30$$

$$P(\text{dBk}) = -9$$

Subtracting:

$$F(\text{dBu}) = 40 - (-9)$$

$$F(\text{dBu}) = 49$$

From the look-up table, 49 falls between 45.6 and 52.9 as 400 is interpolated between 200 and 500. Corresponding mileage is 12.